

# Exploring the Current Theoretical Background About Adoption Until Institutionalization of Online Education in Universities: Needs for Further Research

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**Abstract:** Online education in institutional contexts means new organizational problems. The fact that universities need to change to accommodate the impact of technology on learning is already known and accepted. Coping with changes from adoption until institutionalization of online education represents a formidable management challenge for universities. Online education, under the umbrella of e-learning was perceived by several early researchers as an innovation per-se, “established and embedded” in educational institutions. Nevertheless, the Department for Education and Skills of UK insists that e-learning is not embedded at any stage of education. The focus was strongly set on technological, practical and pedagogical aspects but there are relevant reports about failures in embedding innovations in educational institutions. The institutional lack of strategies to cope with international students and new technologies as well as supporting for future online developments clearly appeared in recent studies. Competition in the market of Higher Education has pushed universities towards the adoption of sophisticated organizational practices to ensure effectiveness. These new institutional models require changing traditional functions and roles, as online education does not usually fit into the existing university structure. The transition from on-campus to online education evolves in new roles, either in the pedagogical or in the administration domains. Organizational factors, more than teachers and students attitudes or technological features seem to mark the differences in the general perception about technology-mediated education getting successfully embedded in institutional new programs, roles, procedures, culture and structures. The aim of this paper is to revisit the existing theoretical background about the process from adoption until institutionalization of online education and explore the needs for further research. The overall purpose is to encourage researchers to fill the gaps of knowledge helping university managers to address a more clear understanding of the individual and organizational interactions that influence the development of strategies and institutionalization of emergent online educational initiatives. Exploring the current theoretical background it could be found that IT-innovation adoption models describe very extensively organizational issues, but they mainly take into account educational innovation take-up, adoption and implementation as isolated stages. They focus on factors and prescribed practices, but not on the human interactions during the transition from individual adoption until institutionalization. The disconnection between individual and organizational IT adoption research was remarked by the Diffusion Interest Group in Information Technology (DIGIT) in their 2004 conference. Since then, several authors have claimed for a better understanding of this linkage. The lack of clearness about the phenomena and a description of how individual and group-level processes enable and/or hinder the development of organizational routines, were reported as a still under-developed topic and according to the findings of this review it seems to be still an ongoing theme. Consequently, under the circumstance of the transformation that universities are undergoing, the need for a systematic study analyzing the implementation of emergent IT innovations in education appears as significant. Particularly, the process from its adoption at individual level until its institutionalization and the linkage between individual and organizational purposes need to be addressed.

**Keywords:** online education, adoption, organizational factors, institutionalization, universities

## 1. Introduction

Online education can be seen as innovation, accordingly with the classic widely accepted definition of innovation as the adoption of an idea or behaviour that is new to an organization. Its features produce the transformation of practices in a community stated by Denning (2004) who sees innovation as the adjustments to community practices that generate more value to the members than the existents.

- Student-centered and student-controlled model of lifelong learning
- Universities as business organizations
- University learning, teaching and marketing based on collaboration
- Coexistence with traditional learning
- Convergence of IT innovations
- Social-networking
- Borderless internationalization

Many traditional educational institutions are slowly getting involved in online programs or extended traditional programs which Hanna (1998) defined as extended traditional universities. This kind of universities operates as the parent organization to a 'virtual program' serving a non-traditional, geographically dispersed student body. Over the last decades, the rhythm of pedagogical innovation has become faster due to technological developments. When innovative pedagogy presses the learning process while the academic routines on which they depend remain unchanged a gap with the institutional culture soon arises (Banks & Powell, 2002).

In the last years new stages of online education can be identified: the so called emergent e-learning practices, based on networked collaborative concepts, which differentiate them from the first wave of one-way e-learning and the second wave of two-way e-learning modalities. New innovation waves enter the scene of the still unsolved issue of universities successful institutionalization of the traditional modalities of e-learning

Online education is studied in the international research field of Educational Technology, a young field, sometimes criticized for its lack of cumulativity (Hoadly & Pea, 2002). Then, its literature review contributions need to focus on the exposure of theoretical gaps.

The body of research in the field of adoption and diffusion of IT-based innovations by individuals and organizations between 1992 and 2003 was extensively reviewed and analyzed by Jeyaraj et al. (2006). From 99 empirical articles studied, 51% referred to business or industrial organizational domain but none of them addressed Higher Education organizations.

Lucas et al. (2007) displayed a look-back view of research adoption of IT innovations during the DIGIT Group meeting in 2006. Preceding works and TAM (Technology Acceptance Model) central positioning research on individual adoption of IT innovations in the early 90's led to another route towards organizational-level concerns of IT adoption. In this new focus new concepts arose, being the most known: diffusion (Rogers, 1962, 1995, 2003), infusion/incorporation (Apple & Zmud, 1992), innovativeness (Lind & Zmud, 1991), routinization (Saga & Zmud, 1994), and assimilation (Armstrong & Sambamurthy, 1999; Purvis et al., 2001; Zhu et al., 2006).

Lucas found that the research stream was deficient regarding a unifying theory of factors, and the fact that it was being addressed the individual acceptances within organizational contexts but not the organizational use or adoption as institutional issue, among other concerns. Most important, he reported that the challenge still remained nevertheless the years of research passed. TAM, suitable for exploring adoption at individual level has been and was still being used for research at organizational level.

In Gauntlet's (2007) literature review on e-learning in Higher Education within 2000-2007, no articles on adoption of e-learning in Higher Education could be found. Dwivedi et al.'s (2008) review from 1985 until 2007, over 345 articles across 19 journals, located 237 articles about adoption and diffusion of IT innovations in the subject category Computer Science-Information Systems but only two related to e-learning systems.

Online education, under the umbrella of e-learning was perceived by several early researchers as an innovation per-se, "established and embedded" in educational institutions (Spender, 2001; Symonds, 2001) but the Department for Education and Skills of UK (2003) insists that e-learning is not embedded at any stage of education. According to recent works (Alexander, 2004, Ayres & Grisham, 2003), IT has transformed higher education without transforming the places which set the standards for education.

Stakeholders and university managers need enlightening of a situation that is common to global university environments. The process of implementation of IT (Information Technology) educational innovations has to be studied as a whole, from its adoption at individual level until its institutionalization.

For a clear understanding of the process, the analysis of the context will emphasize the university particular environment as the internal context of adoption. The object of adoption, for the purpose of this work, has been defined as 'online education' and the subjects and the process of adoption and institutionalization will be considered at individual (micro) level and organizational (macro) level.

Theories and models underpinning the study of these elements will be discussed in each of the following sections. The aim of this work was to develop a concept-centric literature review of the body of research articles published between 2005-2008 in specialized journals and conferences proceedings to clarify production of articles, evolution in time, use/misuse of terms, and level of analysis used by researchers in this particular field of IS. The overall purpose is to encourage researchers to fill the gaps of knowledge helping university managers to address a more clear understanding of the individual and organizational interactions that influence the development of strategies and institutionalization of emergent online educational initiatives.

To achieve the aim, the following steps were performed:

- Query to databases to list the published articles/papers that fulfilled the search criteria (initial and expanded)
- Cross-checking by manual text analysis of the full articles/papers in the list to confirm relevance
- Classifying of the results according to categories:
  - *By Journals*
  - *By year*
  - *By level of analysis (individual, individual within organization, organizational)*
  - *By methodological approach (qualitative, quantitative)*
  - *By used method*
  - *By most frequent term*

This analysis allowed the statement of gaps and priorities that need to be addressed to generate knowledge about the process of adoption and institutionalization of online education as an interlinked whole, at the sight of the challenge for universities of embedding the emergent e-learning technologies in a borderless environment.

## 2. The education institutional frame as the context of adoption

Clark (1983) defined the Higher Education organization as a social system composed of structures of work, purposes, primary norms, values, beliefs and authority, in which the handling of knowledge is the crucial activity. They are integrated by semiautonomous departments and schools, with chairs and faculties acting like small sovereign states.

A university is a complex formal organization within Higher Education context, matching the characteristics that define any organization: goal-orientation, boundaries, social interaction, a structured activity system, culture etc. (Mintzberg, 1991). In 1994, Bleiklie identified differences between Higher Education institutions and organizations in general: the institutional autonomy within external constraints, the individual freedom and the scientific activity. But the European University Association remarked its extreme emphasis in educational activity, research work, public responsibility and social role (2003).

The existence of schools, faculties and departments relatively autonomous leads to a non clear picture more or less like 'organizations within organizations'. They are like autonomous cells loosely coupled where knowledge-oriented activities take place (Weick, 1976). In addition, the universities' educational environment has acquired another dimension in the form of a virtual educational environment, that is, a virtual university (De Wolf, 2001).

According to Spender (2001), the new globalized world requires to educational institutions:

- Extent of the market
- Customization to meet learner's needs (any time, any place, any pace and in the chunks)
- Interactivity to change, to modify, to manipulate data and to create new knowledge.

These features can be fully provided by online education in a university context opened to educational innovation and willing to embed it into its organizational culture. It integrates pedagogical and technological frameworks, organizational models, learners and teachers' new role and a business perspective.

The concept of collaboration not only has pedagogical implications but involves institutional changes: alliances among colleges, between colleges and high schools, and between colleges and commercial interests are playing leading roles in the development and delivery of online education. A major university challenge concerning online education is sustaining individual and institutional collaboration as an evolutionary business model of innovation. "Co-operate to compete as a strategy of 'collabotition' (collaboration+competition) will be a critical strategy for colleges and universities in the future" (Hanna, 2003).

These features differentiate universities from the other organizations and that is the perspective adopted for the review. Because of the variances in different countries and the fact that in literature the terms universities and Higher Education are often used interchangeable, both terms were considered in the articles review search process.

### **3. Online education as the object of adoption**

In this work, the common framework of terms for the Web Education Systems Project developed by Paulsen (2003) will guide the adoption of the term online education, and it is characterized by:

- The separation of teachers and learners which distinguishes it from face-to-face education
- The influence of an educational organization which distinguishes it from self-study and private tutoring
- The use of computer networks to present or distribute some educational content
- The provision of two-way communication via a computer network so that students may benefit from communication with each other, teachers, and staff.

Online education, as distance and institutionally framed concept, is a research paradigm in the fields of education. Then it will be used as the set of technological, pedagogical, administrative and IS design issues in an integrated and cohesive way. Blended learning, as the linkage from two historically separated models of teaching: traditional and distributed (Bonk & Graham, 2006) was also considered when talking about online education.

In the last years it can be identified a new stage of online education, so called emergent e-learning practices, based on networked collaborative concepts that differentiates it from the first wave of one-way e-learning and the second wave of two-way e-learning modalities.

The term online education was initially preferred as a search term because of the intention of reviewing Internet-supported education as a driver of changes in the university organizational context. But during the starting search phase several terms appeared to be used synonymously to online education in research literature: e-learning, technology-mediated learning, online learning, Internet-based education, web-based learning or virtual learning (VL) among others, contributing to a sense of confusion (Birchard, 2001, Spender, 2001).

A broader consideration was then required. Text analysis of the full papers in the set of results was used to keep selection of articles on the focus and confirm its relevance, besides including the mentioned terms in the search.

### **4. The process of adoption and institutionalization of IT innovations**

Some concepts need to be clarified as they will become part of the institutionalization process and they appeared very frequently in the selected articles. An adoption is a decision to use an innovation (Sauer & Lau, 1997). Intention towards adopting refers to the degree to which a person has a favourable or unfavourable purpose of adopting or rejecting the use of a product or service (Azjen, 1991). Technology acceptance is defined as the degree to which individual users use a given system when usage is voluntary or discretionary (low or high acceptance) (Morris, 1996). Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system and it refers to the accumulated level of users of an innovation (Rogers 1995).

The theoretical context to frame individual online education adoption in Higher Education institutions is commonly Roger's diffusion of innovations theory (1995, 2003) as it is the most widely cited. Regarding the organizational innovation decisions, Rogers identified three types: optional, collective, and authority decisions.

In the case of universities, the picture is not so simple. The strength of the boundaries between faculties and departments or the existence of cross-disciplinary collaborations can affect the adoption process across the institution. Because theories and models of acceptance and adoption were developed addressing commercial products and business organization, some principles differ in IS (Information Systems), and specifically, in educational domains (Bates et al., 2007).

According to Wainwright & Waring (2007), Rogers' earliest model did not focus on new technological innovations and its modifications by subsequent authors to be applied in IT are still controversial (McMaster & Wastell, 2005), has competing theories (Baskerville & Pries-Heje, 2001) or a constantly improved list of innovation adoption factors is being produced (Anand et al., 2006).

More recently, Fichman (2004) showed the emergence of the so called dominant paradigm: the more individuals and organizations possess the right independent variables (greater innovation-related needs and abilities), the more the IT innovation will be adopted (greater frequency, earliness or extent of adoption).

The ongoing process in which a set of activities, structures, and values become an integral and sustainable part of an organization is known as institutionalization (Quality Assurance Project, 2000). It depends on the change getting embedded into the organizational structure with administrators and teachers skilled in and committed to the change, and established procedures to support new educational modalities, teachers and administrators.

Institutionalization of change begins at personal level and can only occur if the conditions are established for long-term support of the initiative (Fullan, 1991). Towler (1998)'s more recent theories stand on the multiple cultural configuration perspective of organizations, enabling diverse views: top-down, bottom-up, or co-existence in an interpretive account of socially constructed realities. Nevertheless, all different perspectives seem to converge in a systemic approach which considers that willingness, sensitivity, flexibility, structures and resources coming from all the stakeholders leads to strategic institutional planning.

The whole process is complex and fuzzy, and many managers rely on rather fixed plans for re-establishing stability when embedding the innovation at institutional level, trying to control the multiple flows among object and actors of the process.

Though more than 80% of universities offer some form of e-learning (Allen & Seaman, 2007), failures (stagnating, shrinking or discontinuing) were reported (Garret, 2004). Ayres & Grisham (2003) noted that "just IT has transformed the context of teaching and scholarship without transforming either teaching or scholarship itself, so has IT transformed higher education without transforming the places that set the standards for education: colleges and universities".

Again, the interchangeable use of terms led to broaden the terms referred to the process in the review and the following ones were considered as search terms: adoption/ transition/ transformation/ intention/ use/ acceptance/ dissemination/ embedding/ institutionalization/ technological innovation/ technological change/ technological integration/ institutional change. Text analysis of the full papers in the results was also required to keep the selection of articles on the focus and confirm its relevance.

## **5. The review process and results**

To the best of my knowledge the reviews mentioned in the Introduction section are the larger and closer related to this research domain but they don't focus on it as a whole. It seems that this domain needs to be explored in specialized journals and conferences proceedings and that was the rationale behind the choices. The period was established from 2005 to 2008. The following databases and meta-searchers were consulted: ABI/INFORM, Business Source Premier, Emerald, JSTOR, Sage Journals, Science Direct, Scirus, Social Science Citation Index, Springerlink, Google Search.

For this work it was necessary to direct the look towards journals specialized in educational (and not in organizational) issues, though the stream is clearly related to the latter. After a search in the mentioned databases with the initial set of key terms, and at the sight of the scarce results, a broader set of terms had to be used. Nevertheless, manual reading and analysis of the full papers was required as validation of relevance.

### 5.1 By journal

A total of 42 journal articles and 11 international conferences papers (Table 1) were found and their relevance validated through cross-checking (results of the search-engine/manual text analysis).

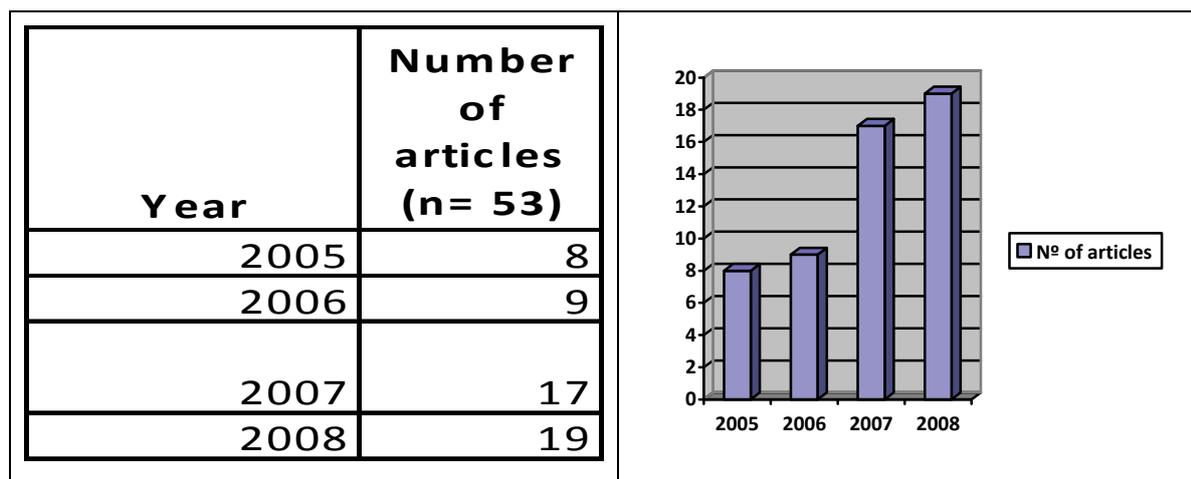
**Table 1:** Number of articles/papers by journal/conference

Journal/Conference	Number of articles (n=53)	% of 53
Educause Quarterly	17	32.06
Computer & Education	11	20.75
Online Journal of Distance Learning Administration	5	9.43
ASCILITE (Australasian Society for Computers in Learning in Tertiary Education).	3	5.65
ICEL (International Conference on E-Learning)	3	5.65
Ariadne	1	1.89
Campus Wide IS	1	1.89
Decision Support Systems	1	1.89
International Journal of Education & Development using ICT	1	1.89
Information & Management	1	1.89
International Journal of Educational Management	1	1.89
Journal of HE Policy & Management	1	1.89
Online Information Review	1	1.89
Tech Trends	1	1.89
ECDL (European Conference on Digital Learning)	1	1.89
EAIR (European Higher Education Society)	1	1.89
IADIS(International Association for Development of the Information Society)	1	1.89
HICSS (Hawaii International Conference on System Sciences)	1	1.89
Intertech ( International Conference on Engineering and Technology Education)	1	1.89

### 5.2 By year

Figures show (Table 2) that the number of articles on adoption in university contexts published in specialized journals and conferences is constantly increasing, with a great growth between 2006 and 2007 of approximately 90%, revealing the interest on the stream. Since 2007, ICT for education has become one of the four transversal lines of the European Lifelong Learning Programme (2007) and a general priority in the four vertical programs (Erasmus, Comenius, and Leonardo da Vinci).

**Table 2:** Number of articles/papers by year



### 5.3 By level of analysis (individual, individual within organization, organizational)

No one explores the whole process from adoption until institutionalization, confirming the reported gap (DIGIT 2004) of disconnection between individual and organizational IT adoption research. Through full text reading and analysis it was possible to identify the level at which adoption is studied in the

selected articles: 21 articles studied the process at individual level, 12 articles explored it at individual level but within organizations, and 20 of them analyzed it at organizational level.

#### 5.4 By methodological approach

Soanes & Stevenson (2004) 's definition about an empirical approach as verifiable by observation or experience, and Alavi et al. (1989) 's consideration of non-empirical studies as those emphasizing ideas and concepts, were the guide when classifying articles. Qualitative, quantitative and mixed methodologies are assumed as empirical research approaches in this classification while theoretical discussions and opinions are categorized as non empirical.

Regarding quantitative, qualitative and mixed approaches I followed Chen & Hirschheim (2004) where they state that the former typically uses numerical analysis to study relationship among factors while the latter emphasizes the description and understanding of the situation behind the factors. When the research uses both qualitative and quantitative approaches we categorized it as mixed approach. The use of mixed approaches looks for expanding the findings of one approach with the others (Creswell, 2009).

Within the empirical studies, quantitative is the most used approach (38%), followed by qualitative approach (26%), non-empirical approach (19%) and finally, mixed approaches (17%). Non-empirical studies represent 19% of the selected articles (Table 3).

**Table 3:** Number of articles by methodological approach

Approach	N° articles	% of 53
Quantitative	20	37,74
Qualitative	14	26,41
Mixed approach	9	16,98
Non-empirical	10	18,87

In the analyzed research domain findings partially coincide with somehow related previous reviews. In Dwivedi et al (2008) empirical studies represented 91% regarding non-empirical. Quantitative approach was at the top of Dwivedi research followed by qualitative approach and the difference between them was 42%.

According to Hrastinski & Keller (2007) in their review of published articles in Computers & Education, Educational Media Int., Journal of Educational Computing Research and Journal of Educational Media, most of the articles refer to, empirical experiences of projects or courses, and e-learning theories and frameworks, mainly relied on quantitative methods measuring learners and teachers attitudes towards educational technologies, their impact and extent of use. The remaining studies fell into qualitative and mixed research approaches focusing on conceptual-analytical design and evaluation of learning environments.

The participation of empirical studies in this review is a little minor than in Dwivedi's: 81% but higher than Hrastinski & Keller who found only 68% of empirical articles. Regarding qualitative vs. quantitative approach, in this review quantitative studies are only 11% higher than qualitative, minor to 42% of Dwivedi et al.' study and Hratinski & Keller's difference of 26%. It seems that though quantitative approach remains as most used, qualitative approach is getting more preferred in this domain of IS field than in the others.

#### 5.5 By used research method

In IS publishing the terms survey and questionnaire are frequently used indifferently and they resulted the main research methods (53%) (Table 4). This dominance was also stated by Orlikowski & Baroudi (1991), Mingers (2001), Choudrie et al. (2005) and Dwivedi et al. (2008). Survey/questionnaire method is followed in this study by the non-empirical method of theoretical discussion and closer by case study. Though Focus Groups and Action Research have a little participation, this is greater than their participation reported in Dwivedi et al. (2008) and Choudrie et al. (2005)

**Table 4:** Number of articles by used research method

<b>METHOD</b>	<b>N° articles</b>	<b>% of 53</b>
Survey/Questionnaire	28	52,83
Theoretical discussion	10	18,87
Case study	8	15,09
Action Research	2	3,77
Focus groups	2	3,77
Document reading	1	1,89
Interviews	1	1,89
Simulation	1	1,89

### 5.6 By most frequent term

Online education concept appears, after full text analysis, mainly under the umbrella of the e-learning concept (21 times out of 38), though in some works the term was unambiguously used (Table 5).

**Table 5:** Terms most frequently used to identify the object of adoption in the selected articles

Most used terms related to the object of adoption	Frequency
E-learning	21
Online learning	4
Online education	4
Distance education	3
Educational Technology	3
Technology Mediated Learning	1
Others	2

Regarding terms related to the process, results showed that although the great variety of terms used interchangeably in the research field, the most frequently used goes on being 'adoption' (Table 6), coinciding with Dwivedi et al. (2008) findings. This fact can be interpreted as an indication of the focus of researchers on the decision and not on the institutional process.

**Table 6:** Terms most frequently used to identify the innovative process in the selected articles

Most used terms related to the processes of innovation	Frequency
Adoption	15
Technology change	8
Institutional strategies/ Institutionalization	6
Acceptance	3
Implementation	2

Most used terms related to the processes of innovation	Frequency
Transformation	2
Dissemination	1
Use	1

## 6. Conclusions and further research

Though literature is growing, organizational issues regarding Higher Education institutions' processes for adoption and institutionalization of online education represents a small proportion of the published literature. Partial aspects of the theme have been studied in several doctoral works, Internet articles and specialized journals (Aboelmaged, 2000; Buckley, 2002; Ensminger et al., 2004; Khakhar, 2001; Levy, 2003; McPherson, 2002; Menchaca et al., 2004; Psycharis, on line; Surry & Ely, 2002; Svensson, 2003), but they mainly focus on the innovation take-up, adoption and implementation stages with emphasis on factors and prescribed practices.

Exploring the current theoretical background about the adoption process of online education it could be found that IT-innovation adoption models describe very extensively organizational issues, but they do not focus on the transition from individual adoption until institutionalization.

Felin and Foss (2005) revealed that "it is a fact that a description of how individual and group-level processes enable and/or hinder the development of organizational routines is still under-developed". The lack of understanding of the adoption of educational innovations and their impact on organizational structures, processes and culture was also reported by Kezar (2002), Taylor (2004) and Woodside & Biemans in 2005. And according to the findings of this review it seems it continues being an ongoing theme.

Some limitations have to be considered regarding these findings. Search results belong to a very special domain of journals involved in the theme, so the number of identified and analyzed articles can be argued. To my best of purpose, the review was systematic and comprehensive, having to use reading of the full papers to identify the relevance of the articles because most frequently, the search terms didn't appear in the title or keywords.

The overall spirit of this work is based on Orlikowski & Barley (2001) 's arguing that "information technology research can benefit from incorporating institutional analysis from organizational studies". They further suggested that "transformations currently occurring in the nature of work and organizing cannot be understood without considering both the technological changes and the institutional contexts that are reshaping economic and organizational activity".

Though a significant increasing tendency could be seen through the period, researchers are not strongly encouraged to go along this path. Only specialized journals and conferences are giving space to presentation and discussion of the theme. It can be assumed that the recent increasing tendency of published articles on this specific domain will reach levels of contribution according to the growing number of initiatives about emergent online education technologies in universities.

Universities have always been international in scope, but the global market in Higher Education poses a potentially serious threat to the current academic culture of these institutions. Internet users are using social computing for learning purposes on their own initiative (Ala-Mutka, 2008; Redecker, 2009). In 2006, 19% of Europeans declared that they used Internet for educational purposes, although only 8% used it for formalized educational activities (Eurostat, online). Innovative Web 2.0 tools like blogs, wikis, discussion forums, and file sharing depict learning spaces where students and teachers work together.

All this structure can be formally organized within online education by universities. So, a new innovation wave enters the scene of the still unsolved issue of successful institutionalization of the precedent modalities of online education. Using social software to support self-governed activities requires a different institutional model of university, opened to a new organizational culture within a new learning philosophy. University teachers and managers will have to accept a kind of

decentralization and relaxation of the control over the learning process moving away more and more from the traditional monolithic university management.

According to Friesen & Anderson (2004) this scenario for online education networks is relevant for lifelong learning. A new institutional vision that takes into account these shifts and trends through a proactive strategy that anticipates future learning needs and requirements is needed, rather than an adaptive strategy which simply reacts to new requirements as they arise. People and institutions are not by definition hostile to change, but there should be sufficient incentives and support to make change possible (Punie et al., 2006). Other authors coincide with this view. There is a tendency to improve existing processes rather than to explore alternatives (Attwell, 2007).

Research on enabling and disabling institutionalization processes of emerging e-learning technologies is scarce. According to the findings in this work, on line education either traditional or social networked learning is at an early unroutinized development stage in universities. Informal initiatives have yet to be turned into formal procedures.

Consequently, under the circumstance of the transformation that universities are undergoing, the need for a systematic study analyzing the implementation of emergent e-learning innovations in educational institutions appears as significant. The process from its adoption at individual level until its institutionalization, and the linkage between individual and organizational purposes, need to be addressed. The understanding of this phase will most probably enlighten the whole institutional process, which is the current challenge within the particular context of universities.

Research interest in the coordinated interaction of technology, pedagogy, design and administrative issues should lead to the shifting of emergent online education. The challenge to move the traditional approach of online education, to a broader conception of borderless, timeless, student-centered and collaborative process offers the opportunity of improving access, sources, social interaction and lifelong learning to students all around the world through new digital technology embedded in an institutional context.

## References

- Abaelmaged, M. (2000). Researching information technology adoption process in Higher Education institutions: a rational for applying individual-based models, Proceedings ICMIT 2000.
- Ajzen, I. (1991). The theory of planned behavior, *Organizational behavior and human decision processes* 50 (2), pp. 179-211.
- Ala-Mutka, K. (2008). Social Computing: Use and Impacts of Collaborative Content. IPTS Exploratory Research on Social Computing. Institute for Prospective Technological Studies (IPTs), JRC, European Commission (online) <http://ftp.jrc.es/EURdoc/JRC47511.pdf>
- Alexander S. (2004). An e-learning ecology, E-agenda 2004 Roundtable (online) <http://www.griffith.edu.au/conference/eagenda2004>
- Allen, I. & Seaman, J. (2007). On line nation: five years of growth in on line learning, Needham: The Sloan Consortium.
- Anand, J., Rottman, J. & Lacity, M. (2006). A Review of the Predictors, Linkages and Biases in IT Innovation Adoption Research, *The Journal of Information Technology*, 21, pp. 1–23.
- Apple L. & Zmud R. (1992). Measuring technology infusion/incorporation, *Journal of Product Innovation Management*, 9(2), pp.148-155
- Armstrong C. and V. Sambamurthy (1999). Information Technology Assimilation in Firms: The Influence of Senior Leadership and IT Infrastructures *Information Systems Research*, 10(4), pp. 304 - 327
- Attwell, G. (2007). The Personal Learning Environments-the future of eLearning? *eLearning Papers*, 2(1) (online) <http://www.elearningpapers.eu/>
- Ayres E. & Grisham C. (2003). Why IT has not paid off as we had hoped (yet), *Educause Review*, Nov-Dec. pp.40-51.
- Banks, S., & Powell, A. (2002). Developing Institutional Readiness for Implementing Networked Learning, *Networked Learning 2002, Proceedings of the Third International Conference*. Sheffield University.
- Baskerville, R. & Pries-Heje, J. (2001). A Multiple-Theory Analysis of a Diffusion of Information Technology Case, *Information Systems Journal* 11(3), pp. 181–212.
- Bates M., Manuel, S. & Oppenheim, C. (2007). Models of Early adoption of ICT innovations in Higher Education, *Ariadne*, 50. [online] <http://www.ariadne.ac.uk/issue50/oppenheim-et-al/>
- Birchard K. (2001). European nations promote online education, *The Chronicle of Higher Education*, 47(33).
- Bleiklie, I. (1994). The new public management and the pursuit of knowledge, *LOS Senter*.
- Bonk, C. & Graham, C. (2006). *The Handbook of Blended Learning*, SF: Pfeiffer.
- Buckley, D. (2002). In Pursuit of the learning paradigm: coupling faculty transformation and institutional change, *Educause*, Jan-02, pp.29-38, [online] [http:// www.educause.edu](http://www.educause.edu)

- Clark, B. (1983). *The Higher Education System: Academic Organization in Cross-National Perspective*. University of California Press.
- De Wolf, H. (2001). *Universities in the network society*. In Van del Molen (Ed.) *Virtual universities? Educational Environments of the future*, Netherlands: Portland Press.
- Department for Education and Skills (2003). *The future of HE*, UK Government white paper, [on line] <http://www.dfes.gov.uk>
- DIGIT (2004) AIS SIGADIT-Diffusion Interest Group in Information Technology (DIGIT) Workshop Pre-ICIS Conference on "Understanding the Micro-Macro Linkages of Individual, Group, and Organizational Adoption/Diffusion". [online] <http://www.sigadit.org/workshops/w2004program.html>
- Dwivedi, Y., Williams, M., Lal, B. & Schwartz, A. (2008). Profiling adoption, acceptance, and diffusion research in the information systems discipline. *Proceedings 16th ECIS 2008 Ireland*.
- Ensminger, D., Surry, D, Porter, B., & Wright, D. (2004). Factors contributing to the successful implementation of technology innovations, *Management Science*, 30, pp.682-695.
- European University Association (2003). *Forward from Berlin: the role of universities to 2010 and beyond*, [online] [http://www.bologna\\_berlin2003.de](http://www.bologna_berlin2003.de)
- Eurostat (online) <http://epp.eurostat.ec.europa.eu/>
- Felin, T. & Foss, N. (2005). Strategic organization: a field in search of micro-foundations, *Strategic Organization*, 3(4), pp. 441–455.
- Fichman, R. (2004). Going Beyond the Dominant Paradigm for IT Innovation Research: Emerging Concepts and Methods, *Journal of the Association for Information Systems*, 5(8), pp.314-355.
- Friesen, N. & Anderson, T. (2004). Interaction for lifelong learning. *British Journal of Educational Technology*, volume 35(6), pp. 679-687.
- Fullan, M. (1991). *The new meaning of educational change*. NY: Teachers College Press.
- Garret, R. (2004). The real story behind the failure of UK eUniversity, *Educause Quarterly*, 27(4) [online] <http://net.educause.edu/ir/library/pdf/eqm0440.pdf>
- Gauntlett, N. (2007). Literature Review on e-learning in Higher Education, Middlesex University [on line] <http://www.mdx.ac.uk/hssc/cetl/docs/elearnrevnov07.pdf>
- Hanna D. (2003). Eleven strategic changes for higher education, *Educause Review*, Jul-Aug, pp.25-34.
- Hanna, D. (1998). Higher education in an era of digital competition: Emerging organizational models. *Journal of Asynchronous Learning Networks*, 2(1), pp. 66-95.
- Hoadley, C. & Pea, R. D. (2002). Finding the Ties that Bind: Tools in Support of a Knowledge-building Community. In Schumar, W. (Ed.) *Building Virtual Communities: Learning and Change in Cyberspace*. Cambridge: Cambridge University Press.
- Jeyaraj, A., Rottman, J. & Lacity, M. (2006). A review of the predictors, linkages, and biases in IT innovation adoption research. *Journal of Information Technology*, 21(1), pp. 1-23.
- Kezar A. (2002) Understanding and facilitating organizational change in the 21st century: recent research and conceptualization, ASHE-ERIC Higher Education Report 28(4).
- Khakhar, D. (2001). *A framework for open distance learning-organization and management*, Portland Press, [online] <http://www.portlandpress.com/pp/books/online>
- Levy, S. (2003). Six factors to consider when planning online distance learning programs in HE, *Online Journal of Distance Learning Administration*, VI(1), [online] <http://www.westga.edu/~distance/ojdl/spring61/levy61.htm>
- Lind M. & Zmud R. (1991). The influence of a convergence in understanding between technology providers and users on information technology innovativeness, *Organization Science* 2(2), pp 195-217
- Lucas H., Swanson E. & Zmud R. (2007). Implementation, Innovation and related themes over the years in Information Systems research, *Journal of the Association for Information Systems*, 8(4), pp. 206-210
- McMaster, T. & Wastell, D. (2005). Diffusion -or Delusion? Challenging an IS Research Tradition. *Information Technology and People*, 18(4), pp. 383–404.
- McPherson, M. (2002). Organizational Critical Success Factors for managing eLearning Implementation, *Proceedings of International Conference on Computers in Education ICCE'02*.
- Menchaca, M., Bischoff, M, & Dara-Abrams, B. (2004). A model for systemic change management in education, *Journal of Systemics, Cybernetics and Informatics*, 2(1).
- Mintzberg, H. (1991). The structuring of organizations, in Mintzberg & Quinn (eds.) *The Strategy process, concepts, contexts, cases*, NJ, Prentice Hall.
- Morris, M. (1996). *A longitudinal examination of information technology acceptance*. School of Business. Indiana, Indiana University.
- Orlikowski W. & Barley S (2001). Technology and institutions: what can research on IT and research on Organizations learn from each other? *MIS Quarterly*, 25(2), pp.145-165
- Paulsen, M. (2003). *Online Education systems: discussion and definition of terms*, [online] <http://home.nettskolen.com/~morten>
- Psycharis, S. [online] Presumptions and actions affecting an e-learning adoption by the educational system: implementation using virtual private networks, [online] <http://eurodl.org/materials>
- Punie, Y., Cabrera, M., Bogdanowicz, M., Zinnbauer, D. & Navajas, E. (2006). *The Future of ICT and Learning in the Knowledge Society*, Joint DG JRC-DG EAC Workshop, Seville, Institute for Prospective Technological Studies, Joint Research Centre, European Commission. (online) <http://www.jrc.es>
- Purvis R., Sambamurthy V. & Zmud R. (2001). The assimilation of knowledge platforms in organizations: an empirical investigation, *Organization Science* 12(2), pp.117-135

- Quality Assurance Project (2000). Institutionalizing quality assurance [online]  
<http://qaproject.org/methods/resinst.html>
- Redecker, C. (2009). Review of Learning 2.0 Practices. IPTS technical report (online)  
<http://ftp.jrc.es/EURdoc/JRC49108.pdf>
- Rogers, E. (1962). *Diffusion of Innovations*, Glencoe: Free Press, Ch. 7.
- Rogers, E. (1995). *Diffusion of innovations*, NY, Free Press.
- Rogers, E. (2003). *Diffusion of innovations*, NY, Free Press.
- Saga V. & Zmud R. (1994). The nature and determinants of information technology acceptance, routinization and infusion, in Levine I. (eds) *Diffusion, transfer and implementation of Information Technology*, North Holland, pp.67-86
- Sauer, C. & Lau, C. (1997). Trying to adapt systems development methodologies – a case-based exploration of business users' interests. *Information Systems Journal*, 7, pp. 255–275.
- Spender D. (2001). Online education: are universities prepared? Online learning in a borderless market Conference Proceedings, Griffith University.
- Surry, D. & Ely, D. (2002). Adoption, Diffusion, implementation and institutionalization of educational technology. In Reinsler & Dempsey (Eds.) *Trends & issues in instructional design and technology*, NJ, Prentice Hall.
- Svensson, L. (2003). Less is more in distance education: the contradictory relationship between rapid adoption and radical innovation. *Educational Technology and Society*, 6 (1) [online]  
[http://ifets.ieee.org/periodical/vol\\_1\\_2003/svensson.html](http://ifets.ieee.org/periodical/vol_1_2003/svensson.html).
- Symonds W. (2001). Giving it the old online try: more people are clicking their way to degrees, creating huge opportunities for the education industry, *Business Week*, Dec. 3760, 76.
- Taylor J. (2004). E-learning as a catalyst for organizational transformation, E-agenda 2004 International Roundtable, (online) <http://www.eagenda.cc>
- Trowler, P. (1998). *Academics Responding to Change: new higher education frameworks and academic cultures*. Buckingham: Open University Press.
- Wainwright, D. & Waring, T. (2007). The application and adaptation of a diffusion of innovation framework for IS research in NHS general medical practice, *Journal of Information Technology*, 22, pp.44-58.
- Weick, K. (1976). Educational organizations as loosely coupled systems, *Administrative Science Quarterly*, 21, pp. 1-19.
- Woodside, A. & Biemans, W. (2005). Managing relationships, networks, and complexity in innovation, diffusion, and adoption processes, *Journal of Business and Industrial Marketing*, 20 (7), pp.335–38.
- Zhu K., Kroemer K. & Xu S. (2006) The process of Innovation assimilation by firms in different countries: a technology diffusion perspective on e-business. *Management Science* 52(10), pp. 1557-1776